

**Notice of Allowability**

Application No.

10/796,672

Examiner

Matthew Landau

Applicant(s)

KIM ET AL.

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed April 20, 2007.
2. ☒ The allowed claim(s) is/are 1-4,6-16 and 43-46.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                      |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                    |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|  | 9. <input type="checkbox"/> Other _____.   |

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with D. Randal Ayers (Reg. #40,493) on April 25, 2007.

Please amend the claims as follows:

1. (Currently Amended) A semiconductor device, comprising:

- (a) a test pattern that includes
  - a word line on a semiconductor substrate;
  - an active region comprising a first impurity doped region and a second impurity doped region;
  - a first contact pad electrically connected to the first impurity doped region, the first contact pad having a first region that covers the first impurity doped region and a second region that is offset from the first impurity doped region;
  - a first bit line electrically connected to the first contact pad;
  - a second contact pad electrically connected to the second impurity doped region;
  - a second conductive line electrically connected to the second contact pad;
- (b) a first probing pad electrically connected to the first bit line;
- (c) a second probing pad electrically connected to the second conductive line; and

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(d) a ~~first-third~~ contact plug between the first bit line and the first probing pad that electrically connects the first bit line and the first probing pad.

2. (Currently Amended) The semiconductor device of Claim 1, further comprising:

a ~~second-first~~ contact plug that penetrates a first insulation layer between the first contact pad and the first bit line, the ~~second-first~~ contact plug electrically connecting the first contact pad to the first bit line; and

a ~~third-second~~ contact plug that penetrates the first insulation layer, the ~~third-second~~ contact plug electrically connecting the second contact pad to the second conductive line.

6. (Currently Amended) A semiconductor device, comprising:

(a) a test pattern that includes

a word line on a semiconductor substrate;

an active region comprising a first impurity doped region and a second impurity doped region;

a first contact pad electrically connected to the first impurity doped region, the first contact pad having a first region that covers the first impurity doped region and a second region that is offset from the first impurity doped region;

a first bit line electrically connected to the first contact pad;

a second contact pad electrically connected to the second impurity doped region;

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- a second conductive line electrically connected to the second contact pad;
- (b) a first probing pad electrically connected to the first bit line;
- (c) a second probing pad electrically connected to the second conductive line; and
- (d) a first-fourth contact plug between the second conductive line and the second probing pad that electrically connects the second conductive line and the second probing pad.

10. (Currently Amended) The semiconductor device of Claim 2, wherein the third-second contact plug is a buried contact.

44. (Currently Amended) The semiconductor device of Claim 1-Claim-5, further comprising an-a-second insulating layer between the first bit line and the first probing pad, wherein the first-third contact plug penetrates the insulating layer.

45. (Currently Amended) The semiconductor device of Claim 6, further comprising an-a-second insulating layer between the second conductive line and the second probing pad, wherein the first-fourth contact plug penetrates the insulating layer.

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***Election/Restrictions***

Claims 1 and 6 are directed to an allowable product. Claims 8 and 10-16, directed to a non-elected species, previously withdrawn from consideration as a result of an election of species requirement, have been rejoined, since they depend from an allowable generic claim. Claims 8 and 10-16 hereby rejoined and fully examined for patentability under 37 CFR 1.104.

***Allowable Subject Matter***

Claims 1-4, 6-16, and 43-46 are allowed.

The reasons for allowance were provided in the Office Action mailed on January 23, 2007.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

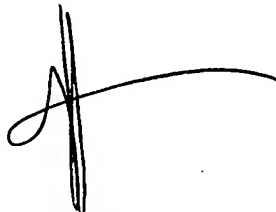
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (571) 272-1731.

The examiner can normally be reached from 8:30 AM - 5:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be

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reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should any questions arise regarding access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



KENNETH PARKER  
SUPERVISORY PATENT EXAMINER

Matthew C. Landau

April 25, 2007